

**ABSTRACT**

A system-on-a-chip integrated circuit has a field programmable gate array core having logic clusters, static random access memory modules, and routing resources, a field programmable gate array virtual component interface translator having inputs and outputs, wherein the inputs are connected to the field programmable gate array core, a microcontroller, a microcontroller virtual component interface translator having input and outputs, wherein the inputs are connected to the microcontroller, a system bus connected to the outputs of the field programmable gate array virtual component interface translator and also to the outputs of said microcontroller virtual component interface translator, and direct connections between the microcontroller and the routing resources of the field programmable gate array core.